

CLAIMS

Having thus described my invention what I claim as new, and desire to secure by Letters Patent is:

- 1 1. A method for changing an array comprising the steps of:
 - 2 changing a variable in a target array to information that represents the location of
 - 3 a different variable when said target array, consisting of a combination of a plurality of
 - 4 various kinds of elements is viewed along a path extending in a predetermined direction,
 - 5 and when a different, complementary variable is present upstream of a variable included
 - 6 in said target array;
 - 7 changing said variable to information indicating that no different, complementary
 - 8 variable is present when no different, complementary variable is present upstream of said
 - 9 variable in said target array; and
 - 10 repeating said steps for all the other variables included in said target array, so that
 - 11 said target array is changed.
- 1 2. A method for analyzing the structure of an array comprising the steps of:
 - 2 changing a variable that is included in a target array consisting of a combination
 - 3 of a plurality of different kinds of elements and that is replaceable of another element into
 - 4 information that represents the location of the same variable when said target array is
 - 5 viewed along a path extending in a predetermined direction, and when said same variable
 - 6 is present upstream of said replaceable variable;
 - 7 changing, when said same variable is not present upstream of said replaceable
 - 8 variable in said target array, all the variables in said target array into information
 - 9 indicating that said same variable is not present, and thus changing said target array into a
 - 10 first array;
 - 11 changing said target array to a second array by using the method according to
 - 12 claim 1; and

13 analyzing the structure of said target array by using said first array and said
14 second array.

1 3. The method according to claim 2, wherein a single suffix tree is prepared while
2 said first and said second arrays are regarded as a single pair of corresponding character
3 strings;

4 wherein, from among sequences of said first and said second arrays, which are
5 provided as labels for edges of said single suffix tree, information that indicates the
6 location of said same variable or said different variable that is not present in each of said
7 sequences is replaced with information that indicates the absence of said same variable or
8 said different variable; and

9 wherein said suffix tree is employed to analyze the structure of said target array.

1 4. The method according to claim 2, wherein said target array is changed to said first
2 and said second arrays by using, as information that indicates the position of the different
3 variable or the position of said same variable, numerical information that represents the
4 number of elements arranged in said target array beginning at the position of a target
5 variable and continuing up to the position of said same variable, or said different
6 variable;

7 wherein, for said first and said second thus obtained arrays, all of said information
8 indicating that said different variable or said same variable is not present in said target
9 array is replaced with numerical information, obtained by inverting the positive and
10 negative signs of said numerical information, indicating the number of elements that are
11 present in another array at locations corresponding to said information;

12 wherein a suffix tree is prepared by regarding the obtained array as a character
13 string; and

14 wherein, among the sequences of said obtained array that are provided as labels
15 for edges of said suffix tree, numerical information indicating the positioning of said
16 same variable or said different variable that is not present in each of said sequences is

17 replaced with information indicating that said same variable or said different variable is
18 not present; and

19 wherein said suffix tree is employed to analyze the structure of said target array.

1 5. The method according to claim 3, wherein said suffix tree is employed to extract
2 a sequence that has the same structure and that frequently appears in said target array, so
3 that said structure of said target array is analyzed.

1 6. The method according to claim 4, wherein said suffix tree is employed to extract a
2 sequence that has the same structure and that frequently appears in said target array, so
3 that said structure of said target array is analyzed.

1 7. The method according to claim 3, wherein said target array is an array where said
2 first target array, first identification information, said second target array, first
3 identification information, said second target array and second identification information
4 are arranged in order; and wherein, when said suffix tree is employed to search for said
5 common sequence for said first and said second arrays, said structures of said first array
6 and said second array are analyzed.

1 8. The method according to claim 4, wherein said target array is an array where
2 said first target array, first identification information, said second target array, first
3 identification information, said second target array and second identification information
4 are arranged in order; and wherein, when said suffix tree is employed to search for said
5 common sequence for said first and said second arrays, said structures of said first array
6 and said second array are analyzed.

1 9. An apparatus for analyzing the structure of an array comprising:
2 first conversion means for converting a target array consisting of a
3 combination of a plurality of different kinds of elements into a first array by changing a
4 variable that is replaceable with another element in said target array into information

5 representing the location of the same variable when said target array is viewed along a
6 path extending in a predetermined direction, and when said same variable is present
7 upstream of said variable, and by changing, when said same variable is not present
8 upstream of said replaceable variable in said target array, all the variables in said target
9 array into information indicating that said same variable is not present;

10 second conversion means for changing said target array into a second
11 array by changing a replaceable variable in a target array into information representing
12 the location of the different variable when said target array is viewed along a path
13 extending in a predetermined direction, and when a different variable that is
14 complementary is present upstream of said replaceable variable and by changing, when
15 said different variable is not present upstream of said replaceable variable in said target
16 array, all the variables in said target array into information indicating that said different
17 variable is not present; and

18 analyzation means for employing said first and said second arrays to
19 analyze the structure of said target array.

1 10. A storage medium on which a program is stored to permit a computer to perform
2 processing comprising:

3 a step of converting a target array consisting of a combination of a plurality of
4 different kinds of elements into a first array by changing a variable that is replaceable
5 with another element in said target array into information representing the location of the
6 same variable when said target array is viewed along a path extending in a predetermined
7 direction, and when said same variable is present upstream of said variable, and by
8 changing, when said same variable is not present upstream of said replaceable variable in
9 said target array, all the variables in said target array into information indicating that said
10 same variable is not present;

11 a second step of changing said target array into a second array by changing a
12 replaceable variable in a target array into information representing the location of the
13 different variable when said target array is viewed along a path extending in a
14 predetermined direction, and when a different variable that is complementary is present

15 upstream of said replaceable variable, and by changing, when said different variable is
16 not present upstream of said replaceable variable in said target array, all the variables in
17 said target array into information indicating that said different variable is not present; and
18 a third step of employing said first and said second arrays to analyze the structure
19 of said target array.

1 11. A transmission medium for transmitting a program to permit a computer to
2 perform processing comprising:

3 a step of converting a target array consisting of a combination of a plurality of
4 different kinds of elements into a first array by changing a variable that is replaceable
5 with another element in said target array into information representing the location of the
6 same variable when said target array is viewed along a path extending in a predetermined
7 direction, and when said same variable is present upstream of said variable, and by
8 changing, when said same variable is not present upstream of said replaceable variable in
9 said target array, all the variables in said target array into information indicating that said
10 same variable is not present;

11 a second step of changing said target array into a second array by changing a
12 replaceable variable in a target array into information representing the location of the
13 same variable when said target array is viewed along a path extending in a predetermined
14 direction, and when a different variable that is complementary is present upstream of said
15 replaceable variable, and by changing, when said different variable is not present
16 upstream of said replaceable variable in said target array, all the variables in said target
17 array into information indicating that said different variable is not present; and

18 a third step of employing said first and said second arrays to analyze the structure
19 of said target array.